

## **Weapons of Mass Destruction (WMD) / Chemical Weapons**

### **Assessment / Treatment Priorities: Overview**

An intentional release of chemical weapons may result in a large number of patients presenting to EMS services in a very short time. If the event is a multiple casualty incident (MCI), many emergency care agencies of the local, state and federal government as well as private providers will be operating simultaneously. Such an event will require the use of an Incident Command System.

Critical to safe and effective operation will be the strict observance of scene safety, specifically as it relates to the establishment of exclusion zones at the scene. It is expected that hot, warm and cold zones will be established according to the principles of hazardous materials response, and that EMS providers will observe the procedures related to each zone. Only those personnel trained and equipped for operation in the hot zone should enter it. Any person involved in patient care should, in addition, take precautions to prevent contamination by residual agent that may be present on casualties, even after they have been decontaminated. **EMS providers must wear PPE appropriate for the zone in which they are operating (hot, warm or cold)** Respiratory protection needs will depend upon the specific agent involved, but when in doubt, all providers should wear approved masks.

EMS providers with prior training in the proper use of personal protective equipment may be able to provide medical care, including the administering of antidote(s) in the warm zone or decontamination line.

Several classes of chemical warfare agents will be identified as part of this protocol.

1. **Nerve Agents** – These inhibit the action of the enzyme cholinesterase, resulting in failure of proper nerve conduction, and ultimately respiratory arrest.
2. **Vesicants** –(blister agents). These cause severe irritation and blistering of skin and mucous membranes. Included in this class are mustard agents and Lewisite. Because these agents also affect mucous membranes, there is overlap between vesicants and pulmonary agents.
3. **Pulmonary Agents** – These cause airway and pulmonary edema. Included in this class are chlorine, phosgene and phosgene oxide.
4. **Cyanide** – (called blood agent by the military). Cyanide causes asphyxiation by interrupting the utilization of oxygen at the cellular level

**Note: All responders should be aware that biologic injuries as well as trauma might also result from any terrorist incident. The use of multiple and different weapons must be considered.**

### **EXPOSURE ROUTES:**

Exposure to chemical weapons may occur via several routes.

1. **Inhalation** – resulting from release of a gas, vapor, or aerosol into the atmosphere.
  - Inhalational agents are considered the most likely way to affect large numbers of people
  - Concentration of the agent will be highest closest to the release point, and decline rapidly with distance.
  - Only a small portion of those exposed will generally have received clinically significant doses; most will have minor symptoms.
  - Aggressive treatment should be reserved for those with life-threatening exposures.Inhalation injuries result in very rapid onset of systemic symptoms.
2. **Transdermal** – exposure usually from liquids, but also can occur from gas or particulate exposure.
  - Onset is variable with both local skin and systemic symptoms and may be delayed up to 18 hours.
  - In explosive injuries, injection of material under the skin may occur.
3. **Ingestion** – exposure can occur via the GI tract when the agent is used to contaminate a food or water source.
  - Onset may be rapid, but can be variable.

### **EMS providers must wear PPE appropriate for the zone in which they are operating (hot, warm or cold)**

EMS personnel are to initiate triage, evacuation and care as soon as is safe given their level of training and equipment, often long before the specific agent is identified by detection equipment. In many situations the specific agent may not be quickly identified by first responders, therefore EMS personnel should look to recognize the signs and symptoms that are presenting in the patient to dictate management. Treatment with specific antidotes should be restricted to patients

triaged in the red category, unless availability of antidote permits wide distribution of specific treatment.

1. In mass casualty incident, use triage cards as appropriate, always checking patients for evidence of prior triage and treatment.
2. Consider triaging as red or yellow any asymptomatic patients known to have been exposed to agents with delayed onset of critical symptoms.
3. Patients with associated blast injuries should be considered immediate (red) due to delayed onset of critical symptoms.

### **DECONTAMINATION:**

1. All patients **MUST** be decontaminated prior to entry into the cold zone, regardless of severity.
2. Decontamination must include removal of all clothing and washing of hair.
3. Decontamination options include:
  - a. Soap and water: The most currently accepted decontamination solution **for patients is** soap and water.
  - b. Bleach and water: The most currently accepted decontamination solution for **equipment** is 0.5% hypochlorite (Household bleach diluted 1:10)
  - c. In the absence of water; absorbent powders such as:
    - i. Flour
    - ii. Talcum powder
    - iii. Fuller's Earth
4. Irrigate eyes thoroughly for vesicant exposure
5. Treat pregnant females the same as non-pregnant
  - a. **TRAINING:** The training component of a Weapons of Mass Destruction program should be equivalent to or exceed the current Domestic Preparedness Training Course provided by the U.S. Army Medical Research Institute of Chemical Defense. (USAMRICD).

**Table ASSESSMENT / TREATMENT PRIORITIES: Overview**

<b>Procedures</b>	<b>Points to Remember</b>
1. Ensure scene safety	<ul style="list-style-type: none"><li>• Observe restriction zones</li><li>• Maintain body substance isolation precautions with PPE for the zone they are working in.</li></ul>
2. Notify Incident Commander	<ul style="list-style-type: none"><li>• As per ICS</li></ul>
3. Remove patients from hazardous area	<ul style="list-style-type: none"><li>• Decontaminate as necessary</li><li>• Triage to appropriate category</li></ul>
4. Perform primary assessment and begin treatment of life threatening symptoms	<ul style="list-style-type: none"><li>• Establish and maintain airway</li><li>• Assist ventilations</li><li>• Control bleeding</li><li>• Maintain circulation</li><li>• Immobilize spine</li></ul>
5. Perform secondary assessment	<ul style="list-style-type: none"><li>• Note vital signs</li><li>• Level of consciousness</li><li>• Presence of trauma or burns</li></ul>
6. Continue treatment	<ul style="list-style-type: none"><li>• Administer 100% oxygen by non-rebreather mask</li><li>• Observe closely for airway secretions and suction as needed</li><li>• Treat for shock as appropriate</li></ul>
7. Observe for signs and symptoms of specific agents	<ul style="list-style-type: none"><li>• See Statewide Treatment Protocols Appendix</li><li>• Follow burn care protocols for Vesicants</li><li>• Follow Respiratory Distress/ Bronchospasm Protocols for Pulmonary agents and Vesicant pulmonary exposure</li><li>• If Cyanide is suspected refer to Toxicology / Poisoning Protocol.</li></ul>